Manitoba
Agriculture

formation Update

Guidelines For Estimating
Irrigated Processing Potato
Production Costs

DATE: March, 2001

Potato acreage in Manitoba has increased significantly in the last 5 years. Expansion in world markets for French fries has contributed to this trend. This trend has placed Manitoba second only to Prince Edward Island in total area planted to potatoes. Processing acreage in Manitoba accounts for between 75%-80% of the total acreage and results in an annual value-added in excess of $200,000,000. The balance of the acreage is divided between seed and fresh (table) production.

The following budget estimates the cost of producing processing potatoes based on general recommendations in using fertilizers and chemical inputs. The figures provide an economic evaluation of processing potatoes required to cover all costs including labour and investment. Management has not been accounted for in this enterprise budget.

The cash input costs associated with growing irrigated processing potatoes are substantial. It is important for farm managers to do detailed budgets if they are to select the optimum combination on inputs that will maximize profits. Detailed planning is also necessary when estimating the required amount of operating credit. The importance of good financial management can be emphasized by noting that a 180 hectare (450 acre) processing potato farm requires over $500,000 for cash input costs.

To estimate a cash flow budget the actual payments on principal and interest may be substituted for the fixed costs in the budget. As well, an estimate has to be made to cover family living expenses and funds required for capital purchases.

Irrigated Processing Potato - Cost of Production 2001

	Cost /Acre	Cost /CWT	Your Cost
A. Operating Costs			
1.01 Seed	$174.20	$0.79	
1.02 Fertilizer	$82.50	$0.38	
1.03 Herbicides	$59.93	$0.27	
1.04 Fungicide & Insecticide	$184.00	$0.84	
1.05 Fuel Costs-Field	$36.90	$0.17	
1.06 Trucking Costs	$143.00	$0.65	
1.07 Irrigation Fuel	$24.00	$0.11	
1.08 Maintenance & Repairs	$122.22	$0.56	
1.09 Custom Work & Rental	$93.54	$0.43	
1.10 Hired Labour	$107.89	$0.49	
1.11 Insurance	$71.58	$0.33	
1.12 Utilities	$26.67	$0.12	
1.13 Other Costs	$43.33	$0.20	
Subtotal Operating Costs	$1,169.76	$5.34	
1.14 Interest on Operating	$51.18	$0.23	
Total Operating Costs	**$1,220.94**	**$5.57**	
B. Fixed Costs			
2.01 Own Land Cost	$70.00	$0.32	
2.02 Depreciation	$231.60	$1.05	
2.03 Investment	$101.85	$0.46	
Total Fixed Costs	**$403.45**	**$1.83**	
C. Labour			
3.01 Own Labour	**$87.50**	**$0.40**	
Total Cost of Production	**$1,711.89**	**$7.80**	

Assumptions

1. This budget outlines the cost of producing processing potatoes under irrigated conditions and is based on a pivot system with a river as the water source. (see back page for details)

2. A land base of 450 acres of potatoes was used in developing this budget. Potato crop rotation was based on growing potatoes no more than 1 year in 3.

3. Total gross yield per acre was assumed at 260 cwt/acre with marketable yield estimated at 220 cwt/acre. Assumed contract size of 100,000 cwt.

4. Crop Insurance is based on premiums for 2001 at the 80% coverage rate.

5. All trucking operations related to marketing of processed potatoes were assumed to be custom hauled to the processors. A rate applicable to hauling potatoes approximately 100 miles was assumed.

Irrigated Potato Cost of Production Worksheet

A. Operating Costs				Your Cost
1.01 Seed Cost & Treatment (Russet Burbank)				
Seed		13	cwt/acre	_____
	x	$10.90	$/cwt	_____
	=	$141.70	$/acre	_____
Cutting		13	cwt/acre	_____
	x	$1.50	$/cwt	_____
	=	$19.50	$/acre	_____
Treatment		13	cwt/acre	_____
	x	$1.00	$/cwt	_____
	=	$13.00	$/acre	_____
	Total =	**$174.20**	**$/acre**	_____

1.02 Fertilizer

Nitrogen		140	lbs/acre	
	x	$0.34	$ / lb	
	=	$47.60	$/acre	
Phosphate		60	lbs/acre	
	x	$0.28	$ / lb	
	=	$16.80	$/acre	
Potash		100	lbs/acre	
	x	$0.14	$ / lb	
	=	$13.50	$/acre	
Sulfur		20	lbs/acre	
	x	$0.23	$ / lb	
	=	$4.60	$/acre	
	Total =	**$82.50**	**$/acre**	

1.03 Herbicide

Preplant	$28.01	$/acre	
Desiccation	$20.00	$/acre	
Post emergent	$11.92	$/acre	
Total	**$59.93**	**$/acre**	

1.04 Fungicide & Insecticide

Contact Fungicide		12	number applications	
	x	1	kg/acre	
	x	$10.00	$/kg	
	=	$120.00	$/acre	
Systemic Fungicide		1	number applications	
	x	1	kg/acre	
	x	$28.00	$/kg	
	=	$28.00	$/acre	

Insecticide		4	number applications	
	x	1	kg/acre	
	x	$9.00	$/kg	
	=	$36.00	$/acre	
Total	**=**	**$184.00**	**$/acre**	

1.05 Fuel Costs

a) Field Fuel Costs

	Capacity ac./hr.	TIME hr./ac.	FUEL $/ac.	
Harrow	24.00	0.0417	$0.71	
Deep till	13.50	0.0741	$1.51	
Cultivate	18.50	0.0541	$1.10	
Plant	5.70	0.1754	$2.98	
Harrow	12.00	0.0833	$1.42	
Spray	36.50	0.0548	$0.93	
Cultivate	9.50	0.1053	$1.79	
Hilling	11.40	0.1754	$2.98	
Fertilize	30.00	0.0333	$0.57	
Harvest	2.40	0.4167	$7.09	
Deep till	13.50	0.0741	$1.51	
Headland	13.50	0.0741	$0.68	
Total		1.3622	$23.28	

b) Truck Fuel Costs - from field to storage

	260	gross yield (cwt)	
=	13.0	tons	
÷	12.5	truck capacity (tons)	
=	1.04	trips/acre	
x	15	dist/trip (miles)	
=	15.6	total miles/acre	
÷	2.5	fuel consumption (miles/gal)	
=	6.24	gallons required fuel	
x	$0.48	fuel cost ($/litre)	
Field to Storage Costs =	$13.62	field to storage fuel cost	
Field Costs =	$23.28	field costs	
Total Fuel Costs =	**$36.90**	**fuel cost ($/acre)**	

1.06 Trucking Costs

	220	net yield/acre
x	$0.65	net trucking rate/cwt
=	**$143.00**	**$/acre**

1.07 Irrigation Costs

	72	hours for .75 inches
=	96	hours for 1.0 inches
x	5	inches water applied
x	$7.50	hourly pumping costs
x	3	number of pivots
+	450	acres
=	**$24.00**	**$/acre**

1.08 Maintenance & Repairs

	$30,000	machinery
+	$15,000	trucks
+	$5,000	potato storage
+	$5,000	other buildings
=	$55,000	total
+	450	acres
=	**$122.22**	**$/acre**

1.09 Custom Work & Rental

	$2,025	desiccant
+	$9,945	sprout control
+	$26,325	spraying
+	$1,800	fertilizer
+	$2,000	other
=	$42,095	total
+	450	acres
=	**$93.54**	**$/acre**

1.10 Hired Labour Costs

	$1,800	field preparation
+	$3,000	seeding
+	$3,000	spray & cultivate
+	$25,000	harvest
+	$3,750	irrigation
+	$12,000	storage
=	$48,550	total cost
+	450	acres
=	**$107.89**	**$/acre**

1.11 Insurance

	$6,930	hail insurance	
+	$13,455	crop insurance	
+	$4,212	content insurance	
+	$4,122	trucks	
+	$3,492	bldgs & equip	
=	$32,211	total insurance	
+	450	acres	
=	**$71.58**	**$/acre**	

1.12 Utilities

	$4,500	hydro	
+	$5,000	heating fuels	
+	$2,500	telephone	
=	$12,000	total utilities	
+	450	acres	
=	**$26.67**	**$/acre**	

1.13 Miscellaneous

	$4,000	accounting & legal	
+	$2,500	membership	
+	$2,000	soil testing	
+	$7,000	property taxes	
+	$2,000	shop supplies	
+	$2,000	other costs	
=	$19,500	total miscellaneous	
+	450	acres	
=	**$43.33**	**$/acre**	

1.14 Interest on Operating Costs

(Operating interest is charged on one-half the sub-total operating costs)

	$1,169.76	operating costs	
+	2	average	
=	$584.88	average value	
x	8.75%	operating interest	
=	**$51.18**	**$/acre**	

Capital Investment

Land Value	
Own land 450 ac. @ $1400/ac	**$630,000**
Storage Facilities (120,000 cwt)	
Building & Climate Control ($6.00/cwt)	$720,000
Equipment (bobcat,pilers,etc.)	$60,000
Total Storage Costs	**$780,000**
Irrigation System	
River pump station	$74,000
Booster pump station	$42,000
Pipeline	$171,000
Pivots & generators	$240,000
Total Irrigation Costs	**$527,000**
Machinery & Equipment	
Tractors (assumed 2)	$160,000
Trucks	$60,000
Digger & Windrowers	$95,000
Planter & Sprayers	$45,000
Tillage Equipment	$25,000
Miscellaneous	$10,000
Total Machinery & Equipment Costs	**$395,000**
Total Capital Investment	**$2,332,000**

B. Fixed Costs

2.01 Land Costs

$1,400.00	market value	
x 5.0%	investment rate	
= **$70.00**	**$/acre**	

2.02 Depreciation

$$\frac{\text{Original Value - Salvage Value}}{\text{Useful life}}$$

Storage Facilities			
	$780,000	original value	_____
-	$39,000	salvage value	_____
÷	20	useful life (yrs.)	_____
÷	450	total acres	_____
=	$82.33	$/acre	_____
Machinery & Equipment			
	$395,000	original value	_____
-	$39,500	salvage value	_____
÷	10	useful life (yrs.)	_____
÷	450	total acres	_____
=	$79.00	$/acre	_____
Irrigation System			
	$527,000	original value	_____
-	$52,700	salvage value	_____
÷	15	useful life (yrs.)	_____
÷	450	total acres	_____
=	$70.27	$/acre	_____
Total =	**$231.60**	**$/acre**	_____

2.03 Investment Cost

$$\frac{\text{Original Value + Salvage Value}}{2} \times \text{Investment Rate}$$

Storage Facilities

	$780,000	original value	_____
+	$39,000	salvage value	_____
+	2	average value	_____
x	5.0%	Investment rate	_____
÷	450	total acres	_____
=	$45.50	$/acre	_____

Machinery & Equipment

	$395,000	original value	_____
+	$39,500	salvage value	_____
+	2	average value	_____
x	5.0%	Investment rate	_____
÷	450	total acres	_____
=	$24.14	$/acre	_____

Irrigation System

	$527,000	original value	_____
+	$52,700	salvage value	_____
+	2	average value	_____
x	5.0%	Investment rate	_____
÷	450	total acres	_____
=	$32.21	$/acre	_____
Total =	**$101.85**	**$/acre**	_____

C. Own Labour Costs

	7	hours	
x	$12.50	$/hour	
=	**$87.50**	**$/acre**	

For more information contact your local Manitoba Agriculture office

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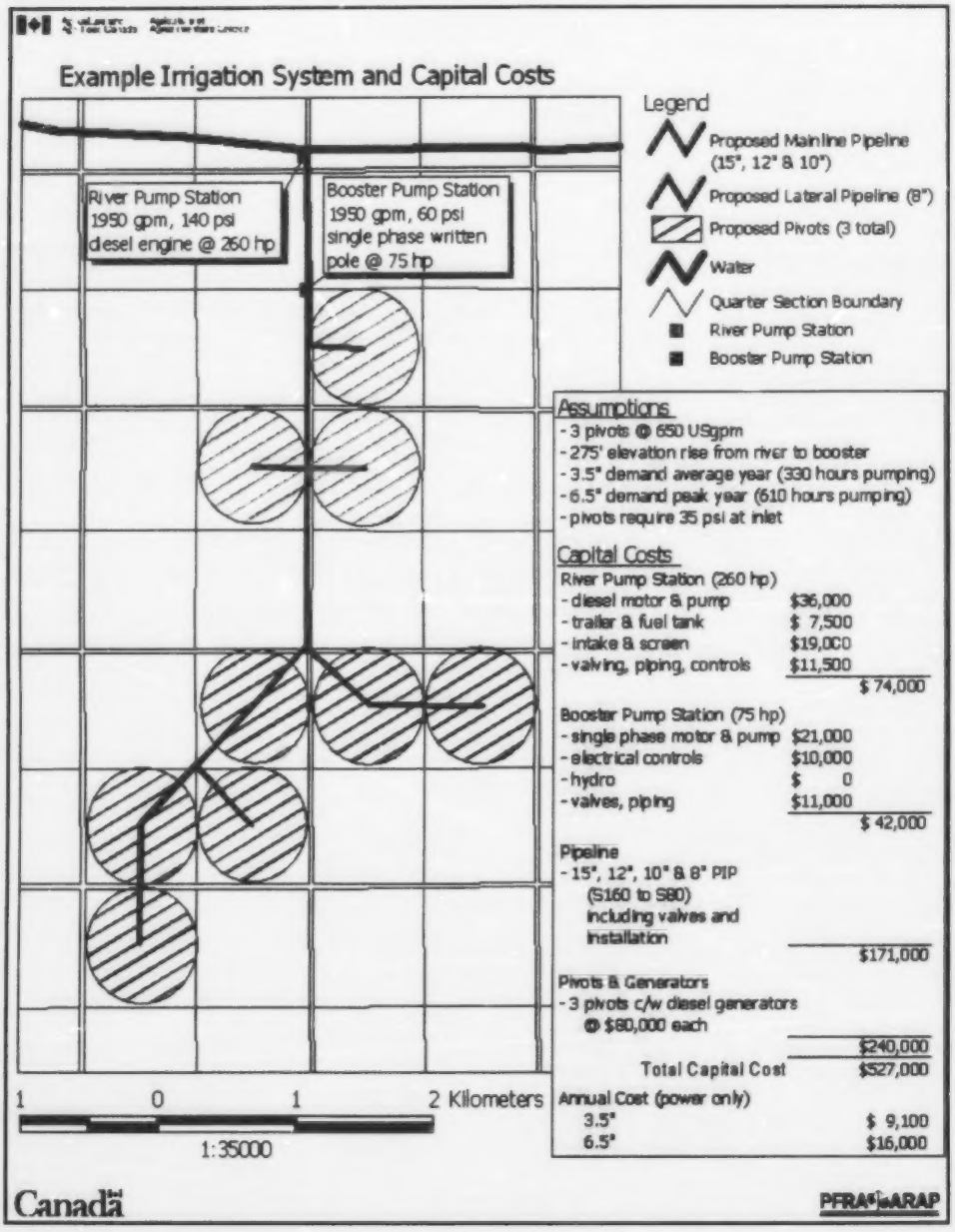
Example Irrigation System and Capital Costs
River Pump Station
1950 gpm, 140 psi
diesel engine @ 260 hp
Booster Pump Station
1950 gpm, 60 psi
single phase written
pole @ 75 hp
Legend
Proposed Mainline Pipeline (15", 12" & 10")
Proposed Lateral Pipeline (8")
Proposed Pivots (3 total)
Water
Quarter Section Boundary
River Pump Station
Booster Pump Station
1 0 1 2 Kilometers
1:35000
Assumptions
- 3 pivots @ 650 USgpm
- 275' elevation rise from river to booster
- 3.5" demand average year (330 hours pumping)
- 6.5" demand peak year (610 hours pumping)
- pivots require 35 psi at inlet
Capital Costs
River Pump Station (260 hp)
- diesel motor & pump $36,000
- trailer & fuel tank $ 7,500
- intake & screen $19,000
- valving, piping, controls $11,500
$ 74,000
Booster Pump Station (75 hp)
- single phase motor & pump $21,000
- electrical controls $10,000
- hydro $ 0
- valves, piping $11,000
$ 42,000
Pipeline
- 15", 12", 10" & 8" PIP (S160 to S80) including valves and installation
$171,000
Pivots & Generators
- 3 pivots c/w diesel generators @ $80,000 each
$240,000
Total Capital Cost $527,000
Annual Cost (power only)
3.5" $ 9,100
6.5" $16,000
Canada
PFRA ARAP